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Sean A. Fiore

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Visual Aid for Hemoglobin A1c Results in Primary Care: A Pilot Study

Sean Fiore, M.S., RN

Rosemary Dale, Ed.D., APRN

Margaret Aitken, D.N.P., APRN

Conflict of Interest Statement

- I declare that there are no relationships, conditions, or circumstances that present a conflict of interest relevant to the content of this presentation.

The Problem

- Poor health literacy and numeracy¹
 - 25% general population with low numeracy
 - Difficulty interpreting meaning & risk
- Access to results does not guarantee appropriate use of information

What does the Evidence Say?

- Visual aids extensively researched^{1,2,3}
 - Associated with better lifestyle choice, risk avoidance
 - Better adherence to treatment
 - Motivation to change
- Conceptual Framework
 - Motivational change theory
 - Fuzzy trace theory⁴

Examples

Current Practice

Component	Your Value	Standard Range	Units
Total Cholesterol	184	< 200 -	mg/dl
Triglycerides	42	< 150 -	mg/dl
HDL Cholesterol	47	40 - 60	mg/dl
LDL Cholesterol	130	< 100 -	mg/dl

Research Example

Total Cholesterol:



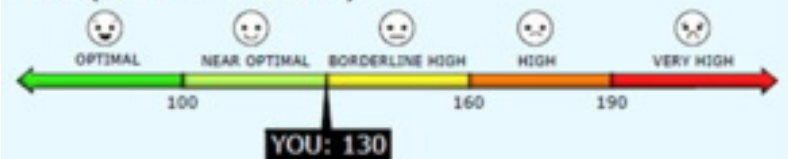
Triglycerides:



HDL ("good" cholesterol):



LDL ("bad" cholesterol):



What I Did

- Web-based visual aid tool – “report card” for Hb A1c
 - Includes risk graphic and simple tips
 - Based on AACE guidelines
- Generates risk graphic depending on:
 - History of DMT2 (yes or no)
 - A1c result (number)
- Mailed visual aid results to patients receiving A1c screening

“Report Card” Example

Your Test Results


Hemoglobin A1c

Age 69

Provider

Test Date: September 06, 2018

Your results at a glance

 6.3% (Borderline range)

Also known as “prediabetes,” proper diet and exercise can help control this. Medications may help with goal achievement.

Questions?

Speak with a nurse at Appletree Bay, or schedule an appointment with your provider.

(802) 863-1313



Goal for next check: 5.7

What is the A1c test?

Your A1c number is a percentage that shows the amount of glucose (sugar) “stuck” to your red blood cells. It is one way of looking at blood sugar control, and generally reflects diabetes management over the past three months.

Why do the A1c test?

One reason is that it helps show your risk for type 2 diabetes and related complications. If you have diabetes, it also shows how well your diet, exercise routine, and medications are working.

What do the Results Mean?

Optimal: less than 5.7%. Lower risk for type 2 diabetes and complications.

Borderline: between 5.7-6.4%. “Prediabetes,” but can be brought back to optimal.

High Risk: Over 6.4%. This is diabetes.* The higher the number, the higher the risk for complications such as vision loss, kidney disease, nerve damage, and foot sores.

* Once you have diabetes, your provider will help you establish an appropriate goal. It is often 6.5% or lower.

What you can do to control your A1c

More ...



Consider fruits for snacks, vegetables with meals, and more lean meat and fish



Set weekly goals for yourself - walking, bicycling, swimming, or anything that gets your heart rate up. Strength-training is important as well.

Less...



Control portions sizes, decrease starchy (think bread, potatoes), greasy, and processed foods. Minimize sweets.

Remember

Preventing and managing diabetes involves setting goals for yourself. Start with small and achievable exercise and dietary targets, and gradually work your way toward an optimal A1c level!



Purpose & Aims

- To pilot a visual aid model for one type of test result within a *clinical setting* – Hb A1c
- Specific Aims:
 - Highlight features helpful or unhelpful
 - Identify any potential behavioral intentions

Context

- Appletree Bay Primary Care
- 2,790 patients, 7,390 visits in 2017
 - Socioeconomically diverse
- Multiple chronic conditions
 - 239 (9%) with DMT2
- Included: any patient receiving A1c screening
- No IRB required



Measures & Analyses

Measures

- Patient perception
 - Descriptive (Likert)
 - Confusing (Likert)
 - Useful (Likert)
 - Prefer visual aid future (yes/no/unknown)
- Behavior intent
 - Need for change (yes/no/unknown)
 - Likelihood for change (Likert)
 - Type of changes (lifestyle modifications)
- Open-ended feedback request

Analyses

- Descriptive statistics
 - Patient perception: all respondents
 - Motivation: DMT2 or prediabetes at goal or not at goal
- Content analysis

Results

Patient Characteristics

- 35 visual aids mailed, 17 responses
 - 10 (59%) with DMT2
 - 3 (30%) not at goal
 - 3 (18%) with prediabetes
 - 3 (100%) not at goal
 - 4 (23%) with no prior diabetes/prediabetes

Patient Perception

- Well-described: 82%
- Non-confusing: 82%
- Useful: 65%
- Would like to see in future: 94%

Results – Intent to Change

	All DMT2 & pre-DM (n=13)	All DMT2 & pre-DM not at goal (n=6)
Should change behavior	9 (69%)	5 (83%)
Likely to change behavior	9 (69%)	5 (83%)
Should increase activity	7 (54%)	5 (83%)
Should improve diet	8 (62%)	4 (67%)
Smoking cessation, Medication adherence, Other	0	0

Results – Content Analysis

Goal awareness	<p>“Goal was new to me, previously unaware there was one.”</p> <p>“Tells me what I’m doing is good [in terms of diet, exercise, medications].”</p>
Absence of jargon	<p>“Used ‘people talk’ instead of medical words.”</p> <p>“Results right there at the top, easy to read.”</p> <p>“Straightforward.”</p> <p>“Self-explanatory.”</p>
Repetition of information	<p>“Already had a plan, did not learn much information.”</p> <p>“Would have been more useful if [NP] didn’t already explain [diabetes] so well to me.”</p>
Suggestions	<p>“Include a ‘latest research’ recommendation [regarding nutrition].”</p> <p>“Include swimming tip for those of us with bad knees.”</p>

Discussion

- Key findings
 - Clarity of results
 - Highlighting of goal
- Results similar to research findings
 - Patients prefer visual aids over tables²
- Easy-to-use, but not yet conducive to system-wide implementation

Limitations

- Sample
 - Most participants already at goal
- Interpretation
 - Subjective approval, but no clinical evidence
- Validity
 - Researcher bias
 - Socially desirable responses

Takeaways

- Perceived as useful
- Potential to motivate change
- More research needed – association with improved outcomes? (i.e., lower A1c)
- Process
 - The more buy-in, the better
 - May be more useful as teaching aid during a visit

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References

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